

November 5, 6.—Images steady and well defined, but very difficult to observe the last phase of I.

November 13.—Sky very clear, but definition very bad. Satellite had already faded considerably at $22^{\text{h}} 0^{\text{m}} 55^{\text{s}}$. Satellite glimpsed at intervals till the recorded time, and was not afterwards seen.

NOTE.—An occulting bar was not employed in the eclipse observations. The times given in the first and seventh columns are the Windsor mean times of observation, diminished by $10^{\text{h}} 3^{\text{m}} 20^{\text{s}}.5$, and entered to the nearest second.

Windsor, N. S. Wales:

1891 February 11.

Ephemeris for Physical Observations of the Moon. By A. Marth.
1891 May 11 to August 31.

Greenwich Noon.	Selenographical Colong. Lat. of the Sun.		Geocentric Libration.		Combined Amount.	Direc- tion.
	Sel. Long.	Lat. of the Earth.				
1891. May 11	305°34'	-0°43'	+ 5°65'	- 2°97'	6°37'	242°2
12	317°57'	0°41'	5°30'	4°26'	6°79'	231°1
13	329°80'	0°38'	4°64'	5°31'	7°04'	221°0
14	342°02'	0°36'	3°73'	6°09'	7°13'	211°3
15	354°24'	0°33'	·63'	6°59'	7°09'	201°6
16	6°45'	0°30'	1°41'	6°80'	6°94'	191°7
17	18°66'	-0°28'	+ 0°15'	- 6°72'	6°72'	181°3
18	30°87'	0°25'	- 1°08'	6°34'	6°44'	170°3
19	43°07'	0°22'	2°23'	5°69'	6°11'	158°6
20	55°26'	0°19'	3°24'	4°78'	5°77'	145°9
21	67°45'	0°16'	4°06'	3°63'	5°44'	131°8
22	79°64'	0°13'	4°66'	2°28'	5°19'	116°1
23	91°82'	0°10'	5°02'	- 0°79'	5°08'	98°9
24	104°00'	-0°07'	- 5°12'	+ 0°77'	5°18'	81°4
25	116°19'	0°04'	4°97'	2°32'	5°48'	64°9
26	128°38'	-0°01'	4°57'	3°77'	5°92'	50°4
27	140°58'	+0°02'	3°96'	5°01'	6°40'	38°2
28	152°78'	0°05'	3°15'	5°98'	6°76'	27°7
29	164°98'	0°08'	2°20'	6°60'	6°95'	18°4
30	177°29'	0°11'	1°15'	6°81'	6°90'	9°5
31	189°41'	+0°14'	- 0°04'	+ 6°62'	6°62'	0°4
June 1	201°64'	0°16'	+ 1°06'	6°01'	6°11'	350°0
2	213°88'	+0°19'	+ 2°12'	+ 5°04'	5°47'	337°2
June 10	311°86'	+0°37'	+ 3°63'	- 5°86'	6°89'	211°7
11	324°10'	0°40'	2°72'	6°45'	6°99'	202°7
12	336°33'	0°42'	1°63'	6°75'	6°95'	193°5

April 1891.

Observations of the Moon.

427

Greenwich Noon.	Selenographical Cologn. of the Sun.		Geocentric Libration.			Direction.	
	Sel. Long. of the Earth.	Lat.	Lat.	Combined Amount.			
1891.	June 13	348°56'	+ 0°45'	+ 0°43	- 6°76	6°77	183°6
	14	0°79	+ 0°47	- 0°83	- 6°47	6°52	172°7
	15	13°01	0°50	2°08	5°90	6°25	160°7
	16	25°23	0°53	3°23	5°07	6°01	147°6
	17	37°43	0°56	4°22	4°01	5°81	133°6
	18	49°63	0°58	4°97	2°73	5°67	118°8
	19	61°83	0°61	5°44	- 1°29	5°59	103°4
	20	74°02	0°64	5°57	+ 0°25	5°58	87°4
	21	86°22	+ 0°67	- 5°36	+ 1°82	5°66	71°2
	22	98°41	0°70	4°81	3°32	5°84	55°3
	23	110°60	0°73	3°96	4°65	6°10	40°3
	24	122°79	0°75	2°86	5°71	6°39	26°5
	25	134°99	0°78	1°62	6°42	6°62	14°1
	26	147°19	0°80	- 0°31	6°73	6°74	2°6
	27	159°40	0°82	+ 0°95	6°62	6°68	351°8
	28	171°62	+ 0°84	+ 2°11	+ 6°09	6°44	341°0
	29	183°84	0°86	3°10	5°19	6°05	329°3
	30	196°07	0°88	3°89	4°00	5°58	315°9
July	1	208°31	0°90	4°47	2°59	5°17	300°1
	2	220°55	+ 0°92	+ 4°84	+ 1°05	4°96	282°3
July	10	318°55	+ 1°07	+ 0°78	- 6°67	6°71	186°7
	11	330°79	1°09	- 0°45	6°45	6°47	176°0
	12	343°02	+ 1°11	- 1°74	- 5°96	6°21	163°7
	13	355°25	1°13	3°02	5°21	6°02	149°9
	14	7°47	1°15	4°22	4°23	5°97	135°2
	15	19°69	1°17	5°24	3°04	6°06	120°2
	16	31°90	1°19	6°01	1°69	6°24	105°7
	17	44°11	1°21	6°44	- 0°21	6°45	91°9
	18	56°31	1°23	6°48	+ 1°31	6°61	78°5
	19	68°50	+ 1°24	- 6°08	+ 2°81	6°70	65°1
	20	80°69	1°26	5°25	4°19	6°71	51°3
	21	92°88	1°28	4°02	5°34	6°67	36°9
	22	105°07	1°30	2°48	6°16	6°63	21°9
	23	117°26	1°31	- 0°78	6°57	6°62	6°7
	24	129°45	1°33	+ 0°94	6°55	6°61	351°9
	25	141°65	1°34	2°53	6°09	6°59	337°5
	26	153°86	+ 1°35	+ 3°88	+ 5°24	6°52	323°6
	27	166°07	1°36	4°93	4°08	6°39	309°7

Greenwich Noon.	Selenographical Colong. Lat. of the Sun.	Geocentric Libration.	Combined Amount.	Direction.
	Sel. Long. Lat. of the Earth.			
1891. July 28	178° 29' + 1° 37'	5° 64' + 2° 71'	6° 25'	295° 7'
29	190° 51' 1° 38'	6° 03' + 1° 21'	6° 15'	281° 3'
30	202° 74' 1° 39'	6° 13' - 0° 33'	6° 14'	266° 9'
31	214° 97' 1° 40'	5° 98' 1° 82'	6° 25'	253° 1'
Aug. 1	227° 21' + 1° 41'	+ 5° 64' - 3° 18'	6° 48'	240° 5'
Aug. 9	325° 17' + 1° 47'	- 2° 34' - 5° 23'	5° 73'	155° 9'
10	337° 40' 1° 48'	3° 66' 4° 30'	5° 65'	139° 6'
11	349° 62' 1° 49'	4° 90' 3° 17'	5° 84'	123° 0'
12	1° 84' 1° 50'	5° 98' 1° 89'	6° 27'	107° 6'
13	14° 06' 1° 51'	6° 81' - 0° 49'	6° 82'	94° 1'
14	26° 26' 1° 51'	7° 29' + 0° 97'	7° 36'	82° 4'
15	38° 46' 1° 52'	7° 36' 2° 43'	7° 75'	71° 7'
16	50° 66' + 1° 53'	- 6° 93' + 3° 80'	7° 90'	61° 2'
17	62° 85' 1° 53'	6° 00' 4° 99'	7° 80'	50° 1'
18	75° 03' 1° 54'	4° 59' 5° 90'	7° 47'	37° 8'
19	87° 21' 1° 54'	2° 80' 6° 43'	7° 01'	23° 5'
20	99° 39' 1° 54'	- 0° 78' 6° 52'	6° 56'	6° 8'
21	111° 57' 1° 54'	+ 1° 28' 6° 15'	6° 28'	348° 3'
22	123° 75' 1° 54'	3° 20' 5° 36'	6° 24'	329° 2'
23	135° 94' + 1° 54'	+ 4° 82' + 4° 22'	6° 40'	311° 2'
24	148° 13' 1° 54'	6° 05' 2° 83'	6° 68'	295° 1'
25	160° 33' 1° 54'	6° 85' + 1° 31'	6° 98'	280° 8'
26	172° 54' 1° 53'	7° 24' - 0° 25'	7° 24'	268° 0'
27	184° 75' 1° 53'	7° 25' 1° 75'	7° 46'	256° 4'
28	196° 97' 1° 53'	6° 95' 3° 12'	7° 62'	245° 7'
29	209° 19' 1° 52'	6° 40' 4° 31'	7° 71'	235° 9'
30	221° 42' 1° 52'	5° 65' 5° 27'	7° 72'	226° 9'
31	233° 65' + 1° 51'	+ 4° 75' - 5° 97'	7° 62'	218° 3'